

farther along special lines. The second portion of the work, 'The Birds of North America east of the Ninetieth Meridian' follows the original edition but certain portions have been revised or rewritten, nesting dates have been added and the distribution and nomenclature have been revised according to the third edition of the A. O. U. Check-List.

The bibliographic feature is also carried through this part of the work and after many species are added the titles of important papers relating to them.

The admirable illustrations especially those by Fuertes add greatly to the usefulness of the book. The color plates of the plumages of the Orchard Oriole, Bobolink, and Scarlet Tanager make the successive changes so clear to us that a description seems scarcely necessary, while the plate of the Thrushes should solve for the bird student of the future any difficulties in their identification.

It remains only to mention the colored faunal map inside the cover, the 'Historical Review' and 'Plan of the Work,' which follow the preface, and the extended bibliography of faunal papers arranged according to states and provinces which closes the volume.

The prophesy of the reviewer of the original edition of the 'Handbook' that it was 'marked for a career of extended usefulness' has been abundantly realized and for the present volume we anticipate the same success but in even greater measure.—W. S.

**Eagle Clarke's 'Studies in Bird Migration.'**<sup>1</sup>—For nearly thirty years the name of William Eagle Clarke has been closely identified with the study of bird migration in the British Isles. As one of the members of the British Association's 'Committee on the Migration of Birds' he prepared the five reports which resulted from investigations of this body, and now in two handsome volumes, he presents the results of his life work on this subject.

With the exception of the first two chapters the work deals entirely with the author's studies and conclusions. Chapter I is entitled, Some Ancient and Antiquated Views and Chapter II, Some Modern Views. While the latter does not pretend to be a résumé of the literature of the subject, the writings of a number of important students of migration are referred to, and it is rather remarkable that no mention whatever is made of the reports of Prof. W. W. Cooke issued by the U. S. Department of Agriculture. It is likewise remarkable that Dr. J. B. Watson's experiments with the Noddy and Sooty Terns on the Dry Tortugas are quoted from a review by Mr. Chapman in 'Bird Lore' while Dr. Watson's name is not even men-

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<sup>1</sup> Studies | in | Bird Migration | By | William Eagle Clarke | Keeper of the Natural History Department, the Royal Scottish Museum | With Maps, Weather Charts, and Other | Illustrations | Vol. I | London | Gurney and Jackson | Edinburgh: Oliver and Boyd | 1912 — Svo, Vol. I, pp. i-xvi + 1-323; pll. I-IX. Vol. II, pp. i-viii + 1-346, pll. X-XXV. Price 18s. net.

tioned. Mr. Eagle Clarke attributes the origin of the migration of birds to the failure of the food supply on the approach of cold, but adds that today "the migratory habit has become part and parcel of their lives, through countless ages of practice." He considers, as Dr. Watson's experiments have proved, that migration is accomplished "through a special sense of direction unconsciously exercised" or as Professor Newton phrased it by "inherited but unconscious experience." He points out the familiar routes across the Mediterranean all supposed to be due to following the lines of former land bridges, but makes no mention of the route across the Gulf of Mexico which Prof. Cooke seems to have pretty well proven and which certainly follows no such line, crossing as it does the deepest portion of the Gulf. The Chapters covering bird migration in the British Isles are full of interest and replete with detailed data. These chapter headings are as follows: III. The British Isles and their Migratory Birds; IV. The Geographical Aspects of British Bird-Migration; V. Round the Year among the British Migratory Birds: Spring; VI. Autumn; VII. Winter; VIII. Weather Influences: The Meteorology of Bird-Migration; IX. Migration of the Swallow; X. Fieldfare; XI. Wagtail; XII. Song Thrush; XIII. Skylark; XIV. Lapwing; XV. Starling; XVI. Rook.

Most interesting is the account of the east and west migration into England from the valleys of the Rhine, Maas and Schelde. The birds actually fly *northeast* from the highlands bordering the Alps on the north, down the river valleys and across to southern England where the winter climate is milder; so that they winter in a higher latitude than that in which they nest. In the case of the Rooks and certain other species, Mr. Eagle Clarke states that part of those which breed in England arrive from the south in February and March, while at the same time, those of Central Europe which wintered in southern England are leaving that country for their breeding grounds on the headwaters of the Rhine.

Those who keep yearly records of the arrival of birds in America will be interested in comparing their lists with those which our author has prepared for the British 'harbingers of spring.'

The last ten chapters deal with Mr. Eagle Clarke's sojourns on light-ships, lighthouses and remote islands on the British and Scottish coasts, while pursuing his studies. These are as follows: XVII. A Month on the Eddy-stone; XVIII. A Month on the Kentish Knock Lightship; XIX. Fair Isle, the British Heligoland; XX. A Year with the Migratory Birds at Fair Isle; XXI. The Birds of Fair Isle; XXII. Bird Migration at St. Kilda; XXIII. The Birds of St. Kilda; XXIV. The Flannan Isles; XXV. Sule Skerry; XXVI. Isle of Ushant and Channel Islands. These chapters furnish most interesting reading and a wealth of information. The birds of many of the localities had never been previously studied so that the lists and observations have an interest in addition to that which attaches to the migratory movements.

Mr. Eagle Clarke's 'Studies' will take their place among the noteworthy contributions to the study of Bird Migration, and we can recom-

mend them to all interested in the subject. They are moreover admirable pieces of book making, the paper, typography and binding being all that could be desired, while a number of half-tones, photogravures and maps add to their attractiveness. We may mention especially the frontispiece to volume one from a painting by Marian Eagle Clarke showing the Eddy-stone Lantern on the night of October 12, 1901, with swarms of migrant birds hovering about in the brilliant illumination.—W. S.

**Pycraft's 'A History of Birds.'**<sup>1</sup>—There is no recent book with which we are familiar that gives one a better idea of the breadth of ornithology than this volume and probably no book that the student of birds could read with more profit. Too many ornithologists are inclined to be narrow in their views of the study and to them such a work as Mr. Pycraft has produced will prove a revelation.

The amount of information that the author has managed to crowd between the covers of his book is amazing and no matter what the particular branch of ornithology in which we may be interested we are bound to find here illustrations that are new and comments that are suggestive. We may of course be able to pick out weak points in the treatment of certain subjects to which the author has never given especial study, and a few of his quotations may be from sources not thoroughly reliable, but slight delinquencies are inevitable in a work of such broad scope, and its general excellence and reliability are remarkable. Mr. Pycraft's keynote in this work is evolution; and he considers almost every conceivable phase of the relationship of birds to their environment and to one another.

His theories are often highly original and while there may be room for arguments on the other side, he never fails to present the matter in such a way as to provide ample food for thought. His chapters cover the following subjects. I. Introductory — General Structure of Birds; II–III. Phylogenetic — Origin and Relationship of Birds; IV. Ecological — Distribution, etc.; V. Seasonal Life; Effect of Light, Moisture and Temperature; VI. Migration; VII. Relations to Animate Environment; VIII. Peculiar Interrelations; IX. Phases of Social Life; X. Relations of the Sexes; XI. Nidification; XII, Concerning Eggs; XIII–XIV. Care of the Offspring; XV. Nestling Birds and what they Teach; XVI. The Life-History of Birds. XVII. Variation; XVIII. Acquired Characters; XIX. Natural Selection as Applied to Birds; XX. Artificial Selection; XXI. Sexual Selection; XXII. Isolation; XXIII–XXV. Structural and Functional Adaptations; XXVI. Convergent Evolution.

Mr. Pycraft's vast knowledge of avian anatomy enables him to cite

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<sup>1</sup> *A History of Birds.* | By | W. P. Pycraft | Zoological Department British Museum. | With an Introduction by | Sir Ray Lankester, K. C. B., F. R. S. | and numerous Illustrations and Diagrams | Methuen and Co. | 36 Essex Street, W. C. London [1910] — Svo, pp. i–xxxi + 1–458, with 50 text illustrations and 37 plates, including frontispiece in colors. Price 10s. 6. net.